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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214

B2

Pg 1 of 6

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Note title item

On the face page, in field (56), in "Other Publications", in column 2, line 12,
after "229-299" insert -- (1997) --.

In the drawings:

On Sheet 4 of 9, in FIG. 4, please replace "FIG. 4" with the following figure.

FIG. 4

310 ~

```

extern "C" void
LinearTosRGBColor( Color *pOut, Color *pin )
{
    // finer approximation that avoids taking 3 successive
    // square roots: apply one round of N-R to guess cube
    // root of x*sqrt(sqrt(x))
    for ( int i = 0; i < 4; i++ )
    {
        float x = (*pin)[i];

        float sqrtx = sqrtf(x);
        float sqrt2x = sqrtf(sqrtx);
        float appx = 0.78f*sqrtx+0.22f*sqrt2x;
        float num = x*sqrt2x;
        float cuberoot = (2*fappx+(x*sqrt2x)*(appx*fappx))/3.01 - 0.00025f;
        if ( x < 0.00304f )
            x = 12.921 * x;
        else
            x = 1.055f*cuberoot-0.055f;
        (*pOut)[i] = x;
    }
}

```

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PG 2 of 6

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

note
It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

1 On Sheet 5 of 9, in FIG. 5, please replace "FIG. 5" with the following figure.

FIG. 5

400

```

const __declspec(align(16)) __m128 Const039 = _mm_set1_ps(
0.03928f );
const __declspec(align(16)) __m128 ConstInv1292 = _mm_set1_ps(
1.0f/12.92f );
const __declspec(align(16)) __m128 Const055 = _mm_set1_ps( 0.055f
);
const __declspec(align(16)) __m128 ConstInv1055 = _mm_set1_ps(
1.0f/1.055f );

const __declspec(align(16)) __m128 Const1285 = _mm_set1_ps(
1.285f );
const __declspec(align(16)) __m128 Const0285 = _mm_set1_ps(
0.285f );

```

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214 *B2*

Pg 3 of 4

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

A On Sheet 6 of 9, in FIG. 6, please replace "FIG. 6" with the following figure.

401

FIG. 6

```

extern "C" void
sRGBColor( Color *pOut, Color *pln )
{
    // SIMD: compute BOTH answers and compose output using mask
    __m128 ansBelowDelta = _mm_mul_ps( __m128 * pln, ConstInv1292 );
    __m128 x = _mm_mul_ps( ConstInv1055, _mm_add_ps( __m128 * pln,
Const055 ) );
    __m128 sqrx = _mm_mul_ps( x, x );
    __m128 invsqrtx = _mm_rcp_ps( sqrx );
    __m128 invsqrtx = _mm_rsqrt_ps( x );
    __m128 ansAboveDelta = _mm_div_ps( Const1285,
        _mm_mul_ps( invsqrtx, _mm_add_ps( Const0285, invsqrtx ) ) );
    __m128 TrueflTDelta = _mm_cmplt_ps( __m128 * pln, Const039 );
    __m128 * pOut = _mm_or_ps( _mm_and_ps( TrueflTDelta, ansBelowDelta
),
        _mm_andnot_ps( TrueflTDelta, ansAboveDelta ) );
}

```

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Pg 4 of 4

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

1 On Sheet 7 of 9, in FIG. 7, please replace "FIG. 7" with the following figure.

500

FIG. 7

```

const __decispec(algn(16)) __m128 CONST00304 = _mm_set1_ps( 0.00304f );
const __decispec(algn(16)) __m128 CONST1292 = _mm_set1_ps( 12.92f );
const __decispec(algn(16)) __m128 CONST055 = _mm_set1_ps( 0.055f );
const __decispec(algn(16)) __m128 CONST1055 = _mm_set1_ps( 1.055f );

const __decispec(algn(16)) __m128 CONST078 = _mm_set1_ps( 0.78f );
const __decispec(algn(16)) __m128 CONST1m078 = _mm_set1_ps( 1.0f-0.78f );

const __decispec(algn(16)) __m128 CONST38 = _mm_set1_ps( 0.38f );
const __decispec(algn(16)) __m128 CONST1m38 = _mm_set1_ps( 1.0f-0.38f );

extern "C" void
LinearToRGBColor( Color *pOut, Color *pin )
{
    __m128 ansBelowDelta = _mm_mul_ps( __m128 *pin, CONST1292 );
    __m128 sqrtx = _mm_sqrt_ps( __m128 *pin );
    __m128 sqrt3x = _mm_sqrt_ps( _mm_sqrt_ps( sqrtx ) );
    __m128 pow124 = _mm_add_ps( _mm_mul_ps( CONST38, sqrtx ),
                                _mm_div_ps( _mm_mul_ps( CONST1m38, sqrtx ), sqrt3x ) );
    __m128 ansAboveDelta = _mm_sub_ps( _mm_mul_ps( CONST1055, pow124 ), CONST055 );
    __m128 TruefLTDelta = _mm_cmplt_ps( __m128 *pin, CONST00304 );
    __m128 *pOut = _mm_or_ps( _mm_and_ps( TruefLTDelta, ansBelowDelta ),
                            _mm_andnot_ps( TruefLTDelta, ansAboveDelta ) );
}

```

Note

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pg 5 of 6

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It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the drawings:

On Sheet 8 of 9, in FIG. 8, please replace "FIG. 8" with the following figure.

500

FIG. 8

```

const __decispec(align(16)) __m128 Magic00304 = __mm_set1_ps( 0.00304f );
const __decispec(align(16)) __m128 Magic1292 = __mm_set1_ps( 12.92f );
const __decispec(align(16)) __m128 Magic055 = __mm_set1_ps( 0.055f );
const __decispec(align(16)) __m128 Magic1055 = __mm_set1_ps( 1.055f );
const __decispec(align(16)) __m128 MagicInv3 = __mm_set1_ps( 1.053.0f );
const __decispec(align(16)) __m128 MagicFudge = __mm_set1_ps( 0.00025f );

const __decispec(align(16)) __m128 Magic078 = __mm_set1_ps( 0.78f );
const __decispec(align(16)) __m128 Magic1m078 = __mm_set1_ps( 1.0f-0.78f );

const __decispec(align(16)) __m128 Magic38 = __mm_set1_ps( 0.38f );
const __decispec(align(16)) __m128 Magic1m38 = __mm_set1_ps( 1.0f-0.38f );

extern "C" void
LinearToRGBColor( Color *pOut, Color *pIn )
{
    __m128 ansBelowDelta = __mm_mul_ps( __m128 *pIn, Magic1292 );
    __m128 sqrtx = __mm_sqrt_ps( __m128 *pIn );
    __m128 sqrt2x = __mm_sqrt_ps( sqrtx );
    __m128 appx = __mm_add_ps( __mm_mul_ps( Magic078, sqrtx ),
                                __mm_mul_ps( Magic1m078, sqrt2x ) );
    __m128 cuberoot = __mm_sub_ps(
        __mm_mul_ps( MagicInv3,
                    __mm_add_ps( __mm_add_ps( appx, appx ),
                                __mm_div_ps( __mm_mul_ps( __m128 *pIn, sqrt2x ),
                                            __mm_mul_ps( appx, appx ) ) ) ) );
    __m128 lambda = __mm_sub_ps( MagicFudge, cuberoot );
    __m128 ansAboveDelta = __mm_sub_ps( __mm_mul_ps( Magic1055, cuberoot ), Magic055 );
    __m128 TrueffLTDelta = __mm_cmplt_ps( __m128 *pIn, Magic00304 );
    __m128 *pOut = __mm_or_ps( __mm_and_ps( TrueffLTDelta, ansBelowDelta ),
                               __mm_endnot_ps( TrueffLTDelta, ansAboveDelta ) );
}

```

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Pg 6 of 6

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Note
It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 3, line 5, delete "modern" and insert - - modem - -, therefor.

In column 3, line 32, delete "x^{1/24}" and insert - - x^{1/2.4} - -, therefor.

In column 6, line 63, delete " $X^{1/2.4} = \sqrt[3]{X^{1.25}}$ " and insert - - $x^{\frac{1}{2.4}} = \sqrt[3]{x^{1.25}}$ - -, therefor.

In column 6, line 64, after "which" insert - - can be - -.

In column 8, line 1, delete "x⁰⁵" and insert - - x^{0.5} - -, therefor.

In column 8, line 40, delete "un-altered" and insert - - unaltered - -, therefor.

In column 12, line 6, in Claim 8, after "having" delete "in" and insert - - an - -, therefor.

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